PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference WO43097	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/IB2004/004207	International filing date *(day/month/year)* 21.12.2004	Priority date *(day/month/year)* 26.12.2003
International Patent Classification (IPC) or national classification and IPC INV. B60L11/18		
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 3 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in celectronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
26.10.2005	29.03.2006
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Bronold, H Telephone No. +49 89 2399-2948

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/IB2004/004207

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:

   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages	
1-10	as originally filed
Claims, Numbers	
1-6	received on 08.11.2005 with letter of 08.11.2005
Drawings, Sheets	
1/2, 2/2	as originally filed

   ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/IB2004/004207

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	
	No:	Claims	1-6
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-6
Industrial applicability (IA)	Yes:	Claims	1-6
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V.

1. Reference is made to the following documents:

D1 : US 2001/053950 A1 (HASEGAWA YUSUKE ET AL) 20 December 2001 (2001-12-20)
D2 : US 2003/148154 A1 (KAWASUMI EMI ET AL) 7 August 2003 (2003-08-07)
D3 : US 2002/136935 A1 (IWASAKI YASUKAZU) 26 September 2002 (2002-09-26)

2. Novelty Art. 33(1) and (2) PCT

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
Document D1 discloses (the references in parentheses applying to this document):

A hybrid system comprising:
- a fuel cell unit that generates electricity upon being supplied with a reaction gas (page 2, paragraph 15, "fuel cell"),
- an electricity storage device that stores electric power generated by the fuel cell unit (page 2, paragraph 15, "power storage unit"),
- an electric power control device that controls distribution of electric power supplied to the electric power load from the fuel cell unit and the electricity storage device (page 2, paragraph 15, "idle control device")
- an electric power load (page 2, paragraph 20, "driving motor...air compressor"), and
- a power control portion that controls operation of the fuel cell unit, wherein upon detecting a requested amount of power that is higher than a predetermined value during a pause of operation of the fuel cell unit, the control portion performs an operation control so that the fuel cell unit restarts operation, and controls the electric power load only from the electricity storage device at least during an early stage following a beginning of restart of the operation of

the fuel cell unit (page 2, paragraph 15, "electric power is first supplied from the power storage unit" and page 5 paragraphs 90 and 91).

Although the applicant argues, that the feature "wherein upon detecting a requested amount of electric power that is higher than a predetermined value during a pause of operation of the fuel cell unit" is not disclosed in D1, this feature can be clearly and unambiguously derived from page 5, paragraphs 90 and 91 of D1 where it is stated that "when the energy consumption increases... the electric power is first supplied from the power storage unit". In order to enable the detection and the respective control of the distribution of power supply, thresholds or predetermined values have to be respected. Otherwise no detection of an increase of the energy consumption and no respective control action could take place. Consequently, also the disclosure D1 considers a predetermined value in the sense of claim 1. Therefore, the said feature is disclosed in D1.

2.2 Thus, all features of claim 1 are already known from the disclosure of D1. Consequently, the subject matter of claim 1 does not fulfill the requirements of Art. 33(1) PCT since it is not new in the sense of Art. 33(2) PCT.

2.3 The subject matter of independent method claim 6 relates to a method which is merely defined by steps of purposive use of the apparatus according to the subject matter of claim 6. Thus, the above said with respect to the subject matter of claim 1 applies mutatis mutandis to the subject matter of claim 6. Therefore, all method steps according to claim 6 are already known from the disclosure of D1. Consequently, the subject matter of claim 6 does not fulfill the requirements of Art. 33(1) PCT since it is not new in the sense of Art. 33(2) PCT.

2.4 Dependent claims 2 to 5 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

Re. Item VIII

1. Clarity Art. 6 PCT

1.1 The majority of features in the apparatus claims 1 to 6 relate to a method of using the apparatus rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from these claims, contrary to the requirements of Article 6 PCT.

Enclosure of October 24, 2005

WO-Patent Application No.: PCT/IB2004/004207
Applicant: TOYOTA JIDOSHA KABUSHIKI KAISHA
Our Ref.: WO 43097

New claims 1 to 6

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1. A hybrid system comprising

a fuel cell unit that generates electricity upon being supplied with a reaction gas,

an electricity storage device that stores electric power generated by the fuel cell unit,

an electric power load,

an electric power control device that controls distribution of electric power supplied to the electric power load from the fuel cell unit and the electricity storage device, and

a control portion that controls operation of the fuel cell unit,

wherein upon detecting a requested amount of electric power that is higher than a predetermined value during a pause of operation of the fuel cell unit, the control portion performs an operation control so that the fuel cell unit restarts operation, and controls the electric power control device so that the requested amount of electric power is supplied to the electric power load only from the electricity storage device at least during an early stage following a beginning of restart of the operation of the fuel cell unit.

2. The hybrid system according to claim 1, wherein the electricity storage device has a capacity characteristic of being able to supply the electric power load with a maximum electric power consumed by the electric power load at least

during the early stage following the restart of the operation of the fuel cell unit.

3. The hybrid system according to claim 1 or 2, wherein the electric power load includes a traction motor for driving a vehicle, and an accessory of the fuel cell unit.

4. The hybrid system according to any one of claims 1 to 3, wherein the early stage following restart of operation is a period that continues from the restart of the operation of the fuel cell unit until the fuel cell unit recovers an I-V characteristic of a steady state.

5. The hybrid system according to any one of claims 1 to 4, wherein the pause of operation of the fuel cell unit includes a pause that occurs during an intermittent operation state of the fuel cell unit.

6. A control method for a hybrid system that has a fuel cell unit that generates electricity upon being supplied with a reaction gas, an electricity storage device that stores electric power generated by the fuel cell unit, and an electric power load, and that supplies an electric power from the fuel cell unit and an electricity storage device, comprising

determining whether the requested amount of electric power of the electric power load is higher than a predetermined value during a pause of operation of the fuel cell unit,

performing an operation control so that the fuel cell unit restarts operation if it is determined that the requested amount of electric power of the electric power load is higher than the predetermined value, and

supplying the requested amount of electric power to the electric power load only from the electricity storage

device at least during an early stage following a beginning of restart of the operation of the fuel cell unit.